

### **Abstract**

A method for fabricating of macroscopic two or three dimensionally ordered arrays of single wall nanotubes (SWNTs) comprising the following steps: chemically treating purified SWNTs using the sol gel process to add chemically reactive groups to either the tube ends or tube bodies in order to functionalize the SWNTs; suspending the functionalized SWNTs in an appropriate liquid medium such that a colloid is produced; treating the colloid with a chemical or heat to promote coupling of the individual functionalized SWNTs to each other; and heating the coupled SWNTs to evaporate any excess liquid so as to provide a final product comprising an array of covalently bound functionalized SWNTs.